JASPERREPORTS - REPORT FIELDS

http://www.tutorialspoint.com/jasper_reports/jasper_report_fields.htm Copyright © tutorialspoint.com

Report fields are elements which represent mapping of data between datasource and report template. Fields can be combined in the report expressions to obtain the desired output. A report template can contain zero or more <field> elements. When declaring report fields, the data source should supply data corresponding to all the fields defined in the report template.

Field Declaration

Field declaration is done as below:

```
<field name="FieldName" />
```

The name attribute

The *name* attribute of the <field> element is mandatory. It references the field in report expressions by name.

The class attribute

The *class* attribute specifies the class name for the field values. Its default value is *java.lang.String*. This can be changed to any class available at runtime. Irrespective of the type of a report field, the engine takes care of casting in the report expressions in which the $F{} token is used, hence making manual casts unnecessary.

Field Description

The <fieldDesciption> element is an optional element. This is very useful when implementing a custom data source, for example. We can store a key or some information, using which we can retrieve the value of field from the custom data source at runtime. By using the <fieldDesciption> element instead of the field name, you can easily overcome restrictions of field-naming conventions when retrieving the field values from the data source.

Following is a piece of code from our existing JRXML file (Chapter Report designs). Here we can see usage of ***name***, ***class*** and ***fieldDescription*** elements.

```
<field name="country" >
    <fieldDescription><![CDATA[country]]></fieldDescription>
</field>
<field name="name" >
    <fieldDescription><![CDATA[name]]></fieldDescription>
</field>
```

Sort Fields

At the times when data sorting is required and the data source implementation doesn't support it (for e.g. CSV datasource), JasperReports supports in-memory field-based data source sorting. The sorting can be done using one or more <sortField> elements in the report template.

If atleast one sort field is specified, during report filling process the data source is passed to a *JRSortableDataSource* instance. This in turn fetches all the records from data source, performs an in memory sort according to the specified fields, and replaces the original data source.

The sort field name should be identical to the report field name. Fields used for sorting should have types that implement java.util.Comparable. Natural order sorting is performed for all fields except those of type java.lang.String (for String type, collator corresponding to the report fill locale is used). When several sort fields are specified, the sorting will be performed using the fields as sort keys in the order in which they appear in the report template. Following example demonstartes the sorting feature.

Sorted Report Example

Let's add the **<sortField>** element to our existing report template (Chapter Report designs). Let's sort field *country* in descending order. The revised report template (jasper_report_template.jrxml) is as follows. Save it to C:\tools\jasperreports-5.0.1\test directory:

```
<?xml version="1.0"?>
<!DOCTYPE jasperReport PUBLIC
"//JasperReports//DTD Report Design//EN"
"http://jasperreports.sourceforge.net/dtds/jasperreport.dtd">

<jasperReport xmlns="http://jasperreports.sourceforge.net/jasperreports"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://jasperreports.sourceforge.net/jasperreports
http://jasperreports.sourceforge.net/xsd/jasperreport.xsd" name="jasper_report_template"
pageWidth="595" pageHeight="842" columnWidth="515" leftMargin="40" rightMargin="40"
topMargin="50" bottomMargin="50">
<parameter name="ReportTitle" />
<parameter name="Author" />
   <queryString>
    <![CDATA[]]>
   </queryString>
   <field name="country" >
      <fieldDescription><![CDATA[country]]></fieldDescription>
   </field>
   <field name="name" >
      <fieldDescription><![CDATA[name]]></fieldDescription>
   </field>
  <sortField name="country" order="Descending"/>
   <sortField name="name"/>
   <title>
      <band height="70">
         <line>
            <reportElement x="0" y="0" width="515"
            height="1"/>
         </line>
         <textField isBlankWhenNull="true" bookmarkLevel="1">
            <reportElement x="0" y="10" width="515"
            height="30"/>
            <textElement textAlignment="Center">
            <font size="22"/>
            </textElement>
            <textFieldExpression >
            <![CDATA[$P{ReportTitle}]]>
            </textFieldExpression>
            <anchorNameExpression><![CDATA["Title"]]>
            </anchorNameExpression>
            </textField>
            <textField isBlankWhenNull="true">
            <reportElement  x="0" y="40" width="515" height="20"/>
            <textElement textAlignment="Center">
                 <font size="10"/>
            </textElement>
            <textFieldExpression >
            <![CDATA[$P{Author}]]>
            </textFieldExpression>
            </textField>
      </band>
   </title>
   <columnHeader>
      <band height="23">
         <staticText>
            <reportElement mode="Opaque" x="0" y="3"
            width="535" height="15"
            backcolor="#70A9A9" />
            <box>
            <bottomPen lineWidth="1.0"
            lineColor="#CCCCCC" />
            </box>
            <textElement />
            <text><![CDATA[]]>
            </text>
         </staticText>
         <staticText>
            <reportElement x="414" y="3" width="121"
            height="15" />
            <textElement textAlignment="Center"
            verticalAlignment="Middle">
                <font isBold="true" />
            </textElement>
            <text><![CDATA[Country]]></text>
         </staticText>
         <staticText>
            <reportElement x="0" y="3" width="136"
            height="15" />
            <textElement textAlignment="Center"
            verticalAlignment="Middle">
               <font isBold="true" />
            </textElement>
            <text><![CDATA[Name]]></text>
         </staticText>
      </band>
     </columnHeader>
     <detail>
      <band height="16">
         <staticText>
            <reportElement mode="Opaque" x="0" y="0"
            width="535" height="14"
            backcolor="#E5ECF9" />
            <box>
               <bottomPen lineWidth="0.25"
               lineColor="#CCCCCC" />
            </box>
            <textElement />
            <text><![CDATA[]]>
            </text>
         </staticText>
         <textField>
            <reportElement x="414" y="0" width="121"
            height="15" />
            <textElement textAlignment="Center"
            verticalAlignment="Middle">
               <font size="9" />
            </textElement>
            <textFieldExpression >
            <![CDATA[$F{country}]]>
            </textFieldExpression>
         </textField>
         <textField>
            <reportElement x="0" y="0" width="136"
            height="15" />
            <textElement textAlignment="Center"
            verticalAlignment="Middle" />
            <textFieldExpression >
            <![CDATA[$F{name}]]>
            </textFieldExpression>
         </textField>
      </band>
   </detail>
</jasperReport>
```

The java codes for report filling remains unchanged. The contents of the file **C:\tools\jasperreports-5.0.1\test\src\com\tutorialspoint\JasperReportFill.java** are as below.

```
package com.tutorialspoint;

```

```
import java.util.ArrayList;
import java.util.HashMap;
import java.util.Map;

import net.sf.jasperreports.engine.JRException;
import net.sf.jasperreports.engine.JasperFillManager;
import net.sf.jasperreports.engine.data.JRBeanCollectionDataSource;

public class JasperReportFill {
   @SuppressWarnings("unchecked")
   public static void main(String[] args) {
      String sourceFileName =
      "C://tools/jasperreports-5.0.1/test/jasper_report_template.jasper";

      DataBeanList DataBeanList = new DataBeanList();
      ArrayList<DataBean> dataList = DataBeanList.getDataBeanList();

      JRBeanCollectionDataSource beanColDataSource =
      new JRBeanCollectionDataSource(dataList);

      Map parameters = new HashMap();
      /**
       * Passing ReportTitle and Author as parameters
       */
      parameters.put("ReportTitle", "List of Contacts");
      parameters.put("Author", "Prepared By Manisha");

      try {
         JasperFillManager.fillReportToFile(
         sourceFileName, parameters, beanColDataSource);
      } catch (JRException e) {
         e.printStackTrace();
      }
   }
}
```

The contents of the POJO file **C:\tools\jasperreports-5.0.1\test\src\com\tutorialspoint\DataBean.java** are as below:

```
package com.tutorialspoint;

public class DataBean {
   private String name;
   private String country;

   public String getName() {
      return name;
   }

   public void setName(String name) {
      this.name = name;
   }

   public String getCountry() {
      return country;
   }

   public void setCountry(String country) {
      this.country = country;
   }
}
```

The contents of the file **C:\tools\jasperreports-5.0.1\test\src\com\tutorialspoint\DataBeanList.java** are as below:

```
package com.tutorialspoint;

import java.util.ArrayList;

public class DataBeanList {
   public ArrayList<DataBean> getDataBeanList() {
      ArrayList<DataBean> dataBeanList = new ArrayList<DataBean>();
      dataBeanList.add(produce("Manisha", "India"));
      dataBeanList.add(produce("Dennis Ritchie", "USA"));
      dataBeanList.add(produce("V.Anand", "India"));
      dataBeanList.add(produce("Shrinath", "California"));

      return dataBeanList;
   }

   /**
    * This method returns a DataBean object,
    * with name and country set in it.
    */
   private DataBean produce(String name, String country) {
      DataBean dataBean = new DataBean();
      dataBean.setName(name);
      dataBean.setCountry(country);
      return dataBean;
   }
}
```

Report generation

We will compile and execute the above file using our regular ANT build process. The contents of the file build.xml (saved under directory C:\tools\jasperreports-5.0.1\test) are as below.

> *The import file - baseBuild.xml is picked from chapter Environment Setup and should be placed in the same directory as the build.xml.*

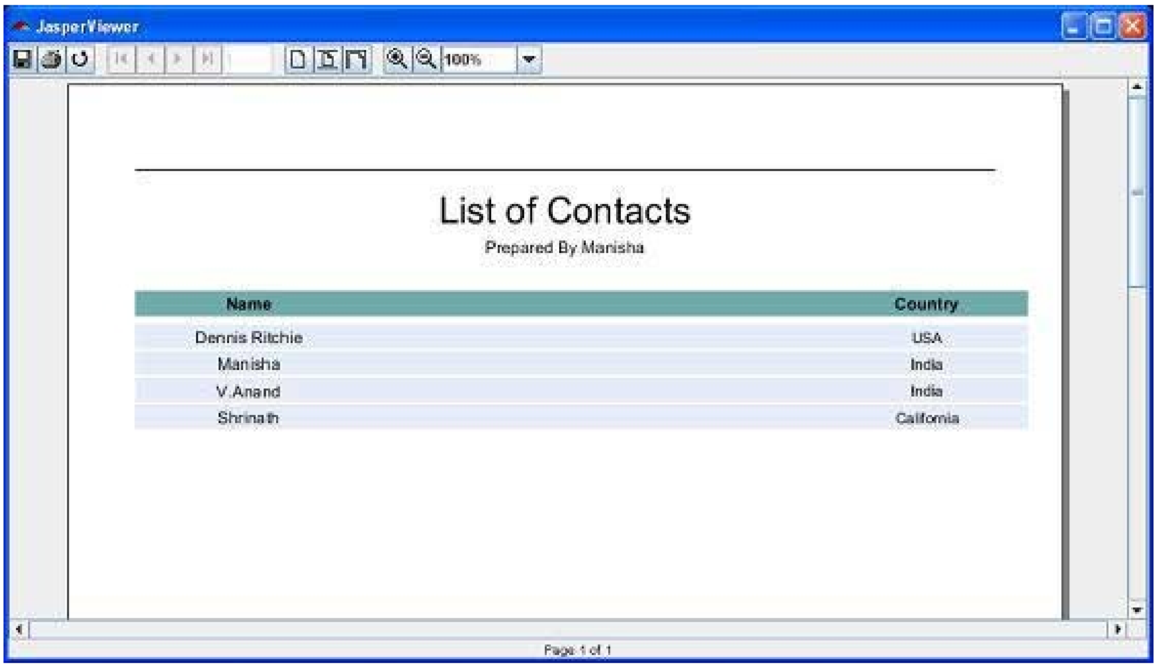
```
<?xml version="1.0" encoding="UTF-8"?>
<project name="JasperReportTest" default="viewFillReport" basedir=".">
   <import file="baseBuild.xml" />
   <target name="viewFillReport"
      depends="compile,compilereportdesing,run"
      description="Launches the report viewer to preview
      the report stored in the .JRprint file.">
      <java classname="net.sf.jasperreports.view.JasperViewer"
      fork="true">
         <arg value="-F${file.name}.JRprint" />
         <classpath ref />
      </java>
   </target>
   <target name="compilereportdesing"
      description="Compiles the JXML file and
      produces the .jasper file.">
      <taskdef name="jrc"
      classname="net.sf.jasperreports.ant.JRAntCompileTask">
         <classpath ref />
      </taskdef>
      <jrc destdir=".">
         <src>
         <fileset dir=".">
            <include name="*.jrxml" />
         </fileset>
         </src>
         <classpath ref />
      </jrc>
   </target>
</project>
```

Next, let's open command line window and go to the directory where build.xml is placed. Finally execute the command **ant -Dmain-class=com.tutorialspoint.JasperReportFill** (viewFullReport is the default target) as follows:

```
C:\tools\jasperreports-5.0.1\test>ant -Dmain-class=com.tutorialspoint.JasperReportFill
Buildfile: C:\tools\jasperreports-5.0.1\test\build.xml
```

```
clean-sample:
   [delete] Deleting directory C:\tools\jasperreports-5.0.1\test\classes
   [delete] Deleting: C:\tools\jasperreports-5.0.1\test\jasper_report_template.jasper
   [delete] Deleting: C:\tools\jasperreports-5.0.1\test\jasper_report_template.jrprint

compile:
    [mkdir] Created dir: C:\tools\jasperreports-5.0.1\test\classes
    [javac] C:\tools\jasperreports-5.0.1\test\baseBuild.xml:28: warning:
    'includeantruntime' was not set, defaulting to build.sysclasspath=last;
    set to false for repeatable builds
    [javac] Compiling 7 source files to C:\tools\jasperreports-5.0.1\test\classes

compilereportdesing:
      [jrc] Compiling 1 report design files.
      [jrc] log4j:WARN No appenders could be found for logger
      (net.sf.jasperreports.engine.xml.JRXmlDigesterFactory).
      [jrc] log4j:WARN Please initialize the log4j system properly.
      [jrc] log4j:WARN See http://logging.apache.org/log4j/1.2/faq.html#noconfig
      for more info.
      [jrc] File : C:\tools\jasperreports-5.0.1\test\jasper_report_template.jrxml ... OK.

run:
     [echo] Runnin class : com.tutorialspoint.JasperReportFill
     [java] log4j:WARN No appenders could be found for logger
     (net.sf.jasperreports.extensions.ExtensionsEnvironment).
     [java] log4j:WARN Please initialize the log4j system properly.

viewFillReport:
     [java] log4j:WARN No appenders could be found for logger
     (net.sf.jasperreports.extensions.ExtensionsEnvironment).
     [java] log4j:WARN Please initialize the log4j system properly.

BUILD SUCCESSFUL
Total time: 18 seconds
```

As a result of above compilation, a JasperViewer window opens up as in the screen below:



List of Contacts

Prepared By Manisha

Name	Country
Dennis Ritchie	USA
Manisha	India
V.Anand	India
Shrinath	California

Here we can see that the country names are arranged in descending order alphabetically.